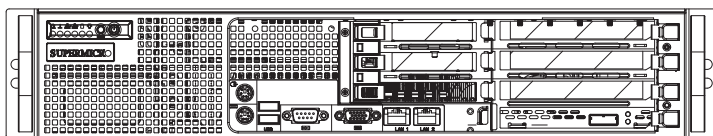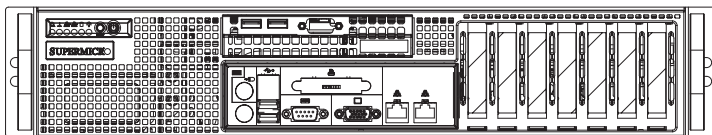# SUPER®

SC823M Chassis Series

SC823MTQ-R700UB
SC823MTQ-R700LPB

USER'S MANUAL

1.0

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at www.supermicro.com.**

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California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate"

WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.

Preface

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SC823M 2U chassis. Installation and maintenance should be performed by experienced technicians only.

Supermicro's SC823M 2U chassis is a short-depth chassis with a unique and highly-optimized design. The chassis is equipped with three 3.5" hot-swappable hard drives and a redundant 700W high efficiency power supply for superb power savings. High-performance fans provide ample optimized cooling for the chassis.

This document lists compatible parts available when this document was published. Always refer to the our Web site for updates on supported parts and configurations.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with this chassis and describes the main features of the SC823M chassis. This chapter also includes contact information.

Chapter 2: System Safety

This chapter lists warnings, precautions, and system safety. You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed before installing and servicing this chassis.

Chapter 3: Chassis Components

Refer here for details on this chassis model including the fans, bays, airflow shields, and other components.

Chapter 4: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 5: Chassis Setup and Maintenance

Follow the procedures given in this chapter when setting up or maintaining your chassis.

Chapter 6: Rack Installation

Refer to this chapter for detailed information on chassis rack installation. You should follow the procedures given in this chapter when installing, removing or reconfiguring your chassis into a rack environment.

Appendices

This section lists compatible cables, power supply specifications, and compatible backplanes. Not all compatible backplanes are listed. Refer to our Web site for the latest compatible backplane information.

Appendix A: Chassis Cables

Appendix B: Power Supply Specifications

Appendix C: SAS-818TQ Backplane Specifications

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Appendix A SC823M Chassis Cables

Appendix B SC823M Power Supply Specifications

Appendix C SAS-818TQ Backplane Specifications

Notes

Chapter 1

Introduction

1-1 Overview

Supermicro's SC823M chassis series offers a 17.7" short-depth 2U foot-print with advanced air flow thermal control. These chassis are designed for front-end servers, database applications, Internet, e-business, server clustering and other server applications. the SC823M supports a wide range of dual/single processor-based E.ATX 13.68" x 13" motherboards, 700 Watt high-efficiency (1+1) redundant power supplies, seven low-profile or three full-height and four low-profile add-on cards, with three rear hot-swappable drivebays.

1-2 Shipping List

Part Numbers

Please visit the following link for the latest shiping lists and part numbers for your particular chassis model http://www.supermicro.com/products/chassis/2U/?chs=823M

SC823M Chassis				
Model	CPU	HDD	I/O Slots	Power Supply
SC823MTQ-R700LP(B)	DP Dual-core Xeon	3x SAS / SATA (Rear)	7 x LP	700W Redundan
SC823MTQ-R700U(B)	DP Dual-core Xeon	3x SAS / SATA (Rear)	4x FH 3x LP	700W Redundan

1-3   Contacting Supermicro

Headquarters

Address: Super Micro Computer, Inc.

                      980 Rock Ave.

                      San Jose, CA 95131 U.S.A.

Tel: +1 (408) 503-8000

Fax: +1 (408) 503-8008

Email: marketing@supermicro.com (General Information)

                      support@supermicro.com (Technical Support)

Web Site: www.supermicro.com

Europe

Address: Super Micro Computer B.V.

                      Het Sterrenbeeld 28, 5215 ML

                      's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390

Fax: +31 (0) 73-6416525

Email: sales@supermicro.nl (General Information)

                      support@supermicro.nl (Technical Support)

                      rma@supermicro.nl (Customer Support)

Asia-Pacific

Address: Super Micro Computer, Inc.

                      4F, No. 232-1, Liancheng Rd.

                      Chung-Ho 235, Taipei County

                      Taiwan, R.O.C.

Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3991

Web Site: www.supermicro.com.tw

Technical Support:

Email: support@supermicro.com.tw

Tel: 886-2-8226-1900

1-4   Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required be-fore any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

Whenever possible, repack the chassis in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the chassis securely, using packaging material to surround the chassis so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages in-curred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Notes

Chapter 2

System Safety

2-1   Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following the steps in order given should enable you to have your chassis setup and operational within a minimal amount of time. This quick set up assumes that you are an experienced technician, famailiar with common concepts and terminology.

2-2   Warnings and Precautions

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, file a damage claim with carrier who delivered your system.

Decide on a suitable location for the rack unit that will hold that chassis. It should be situated in a clean, dust-free area that is well venilated. Avoid areas where heat, electrical noise and eletromagnetic fields are generated.

You will also need it placed near at least two grounded power outlets to take advantage of redundant power features.

2-3   Preparing for Setup

The SC823M chassis includes a set of rail assemblies, including mounting brackets and mounting screws you will need to install the systems into the rack. Please read this manual in its entirety before you begin the installation procedure.

2-4   Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SC823M from damage:

- Be aware of the locations of the power on/off switch on the chassis, as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and the DVD-ROM and floppy drives (not necessary for hot swappable drives). When disconnecting power, you should first power down the system with the operating system and then unplug the power cords from all the power supply modules in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power, if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.

- CAUTION - Serverboard battery: There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- CAUTION - DVD-ROM laser: This server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

2-5   General Safety Precautions

- Keep the area around the chassis clean and free of clutter.

- Place the chassis top cover and any system components that have been re-moved away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

2-6   System Safety

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- Use a grounded wrist strap designed to prevent static discharge.

- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing any board from its antistatic bag.

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

- When handling chips or modules, avoid touching their pins.

- Put the serverboard and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Chapter 3

Chassis Components

3-1 Overview

This chapter describes the most common components included with your chassis. Some components listed may not be included or compatible with your particular chassis model. For more information, see the installation instructions detailed later in this manual.

3-2 Components

Chassis

The SC823M chassis includes one slim DVD-ROM, one slim comport USB tray and three hard drive bays. For the latest shipping lists, visit our Web site at: http://www. supermicro.com.

Backplane

Each SC823M chassis comes with a 2U SAS/SATA backplane. For more information regarding compatible backplanes, view the appendices found at the end of this manual. In addition, visit our Web site for the latest information: http://www. supermicro.com.

Fans

The SC823M chassis accepts four system fans. System fans for the SC823M chassis are powered from the serverboard. These fans are 1U in height and are powered by 3-pin connectors.

Mounting Rails

The SC823M can be placed in a rack for secure storage and use. To setup your rack, follow the step-by-step instructions included in this manual.

Power Supply

Each SC823M chassis model includes high-efficiency redundant power supplies rated at 700 Watts. In the unlikely event that your power supply fails, replacement is simple and can be done without tools. The power supplies are redundant and hot-swappable.

Air Shroud

Air shrouds are shields, usually plastic, that funnel air directly where it is needed. Always use the air shroud included with your chassis.

3-3   Where to get Replacement Components

Although not frequently, you may need replacement parts for your system. To ensure the highest level of professional service and technical support, we strongly recommend purchasing exclusively from our Supermicro Authorized Distributors / System Integrators / Resellers. A list of Supermicro Authorized Distributors / System Integrators /Resellers can be found at: http://www.supermicro.com. Click the Where to Buy link.

Chapter 4

System Interface

4-1   Overview

This chasis includes LEDs on the control panel and drive carriers that indicate the activity and health of specific components.

4-2   Control Panel Buttons

There are two buttons located on the front of the chassis: a reset button and a power on/off button, located on the front of the chassis.
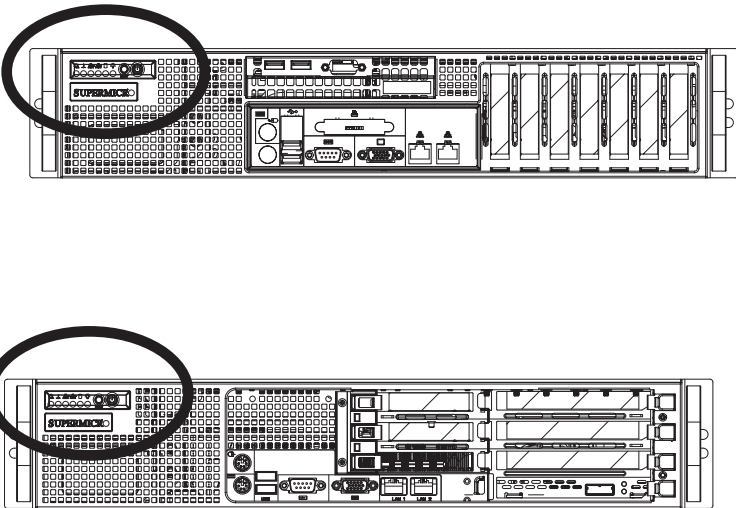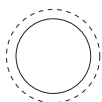

Figure 4-1: Control Panel Buttons and LED Display

Reset: The reset button is used to reboot the system.

Power: The main power switch is used to activate or deactivate power to the server system. Turning off system power with this button removes the main power but keeps standby power. Therefore, you must unplug system before servicing.

4-3   Control Panel LEDs

The control panel located on the front of the SC823M chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Power Failure: When this LED flashes, it indicates a power failure in the power supply.

Overheat/Fan Fail:
When Flashing: This LED indicates a fan failure.
When Continuously On (not flashing): This LED indicates an overheat condition caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. To correct this condition, do the following:

Correcting an Overheat Condition

1. Check the routing of the cables and move any cables the restrict airflow.

2. Confirm that all fans are operating normally.

3. Verify that the heatsinks are installed properly.

4. If the chassis cover is not aligned correctly, the airflow may be disrupted. This leads to overheating. Confirm that the chassis cover is placed correctly.

This LED will remain active as long as the overheat condition exists.

NIC2: Indicates network activity on GLAN2 when flashing.

NIC1: Indicates network activity on GLAN1 when flashing.

- **HDD:** Indicates IDE channel activity. SAS/SATA drive, and/or DVD-ROM drive activity when flashing.

- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

4-4   Drive Carrier LEDs

Your chassis uses SAS/SATA drives.

SAS/SATA Drives

Each SAS/SATA drive carrier has two LEDs.

- **Green:** Each SAS/SATA drive carrier has a green LED. When illuminated, this green LED (on the front of the SAS/SATA drive carrier) indicates drive activity. A connection to the SAS/SATA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** The red LED indicates a SAS/SATA drive failure. If one of the SAS/SATA drives fail, you should be notified by your system management software.

SCSI Drives

This chassis does not support SCSI drives at this time.

Chapter 5

Chassis Setup and Maintenance

5-1   Overview

This chapter covers the steps required to install components and perform maintenance on the chassis. The only tools you will need to install components and perform maintenance is a Phillips screwdriver and under certain circumstances, a hex wrench Print this page to use as a reference while setting up your chassis.

5-2   Installation

- Removing the Chassis Cover

- Installing Hard Drives
  A. Removing Hard Drive Trays from the Chassis
  B. Installing Hard Drive to the Hard Drive Tray

- Installing the Motherboard (Includes I/O Shield and Add-on Card Slot Setup)

- Installing the Air Shroud

- Checking the System Airflow

General Maintenance

- Systems Fans

- Replace Power Supply

- Other Components

⚠ Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: System Safety and the warning/precautions listed in the setup instructions.

5-3   Removing the Chassis Cover

Remove this Screw

Remove this Screw
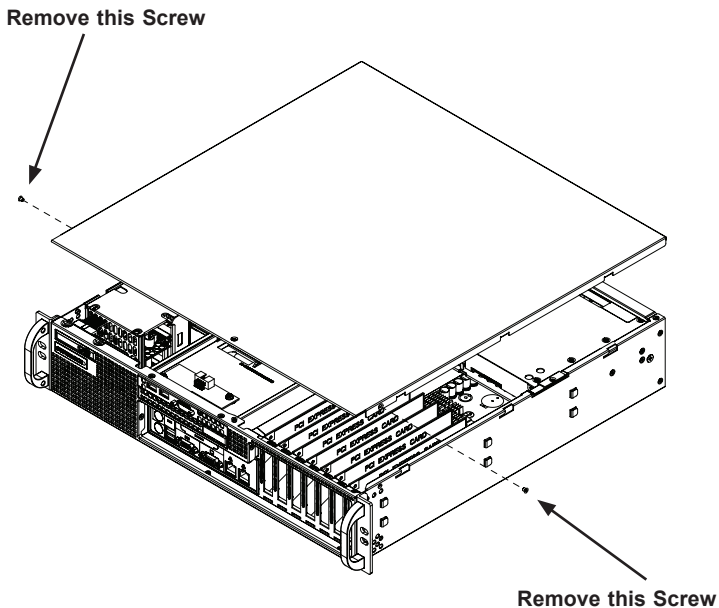
Figure 5-1: Removing the Chassis Cover

Removing the Chassis Cover

1. Remove the two screws holding the chassis in place.

2. Slide the cover toward the rear of the chassis and lift the cover from the unit.

⚠ **Warning:** Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

5-4   Installing the Hard Drives
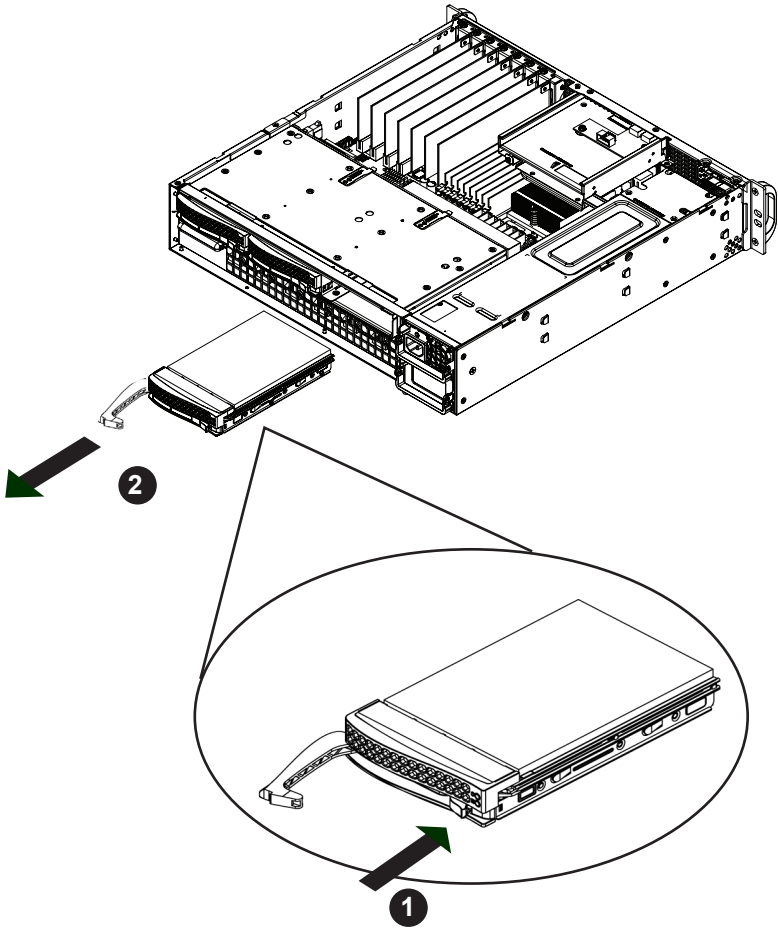
Figure 5-2: Removing Hard Drive

Removing the Hard Drive Trays from the Chassis

1. Press the release button on the drive tray. This extends the drive tray handle.

2. Use the handle to pull the drive out of the chassis.
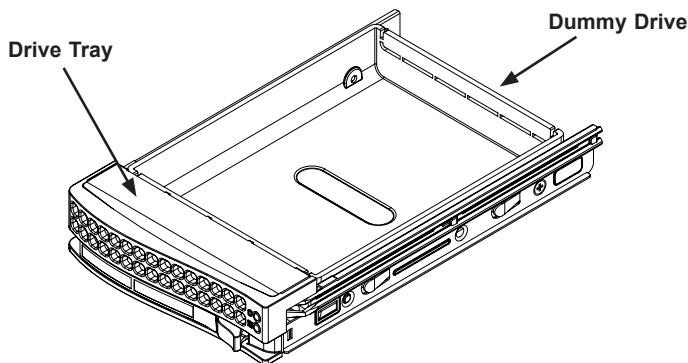
Figure 5-3: Chassis Drive Tray

The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays.

> ⚠️ **Warning: Except for short periods of time (swapping hard drives), do not operate the server with the hard drives empty. The hard drive tray must have a hard drive or dummy drive installed.**
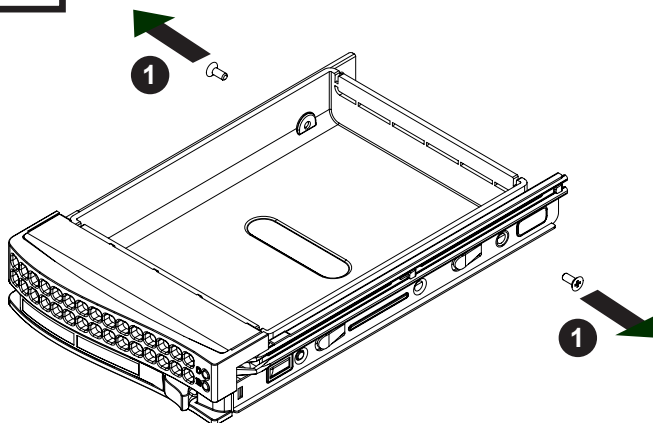
Figure 5-4: Removing Dummy Drive from Tray

Installing a Hard Drive to the Hard Drive Tray

1. Remove the two screws holding connecting the drive tray the carrier.

2. Remove the tray from the carrier.

**SAS/SATA
Hard Drive**

Drive Tray
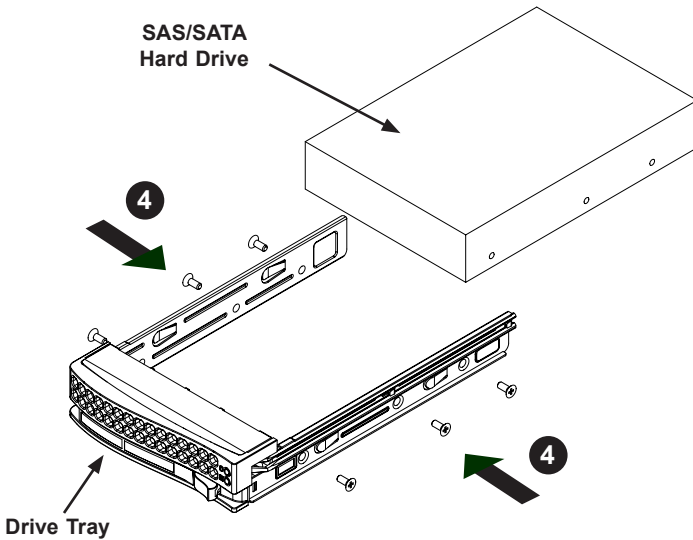
Figure 5-5: Removing Hard Drive

3. Install a new drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.

4. Secure the hard drive by tightening all six screws.

5. Replace the drive tray into the chassis. Make sure the close the drive tray handle.

6. Repeat these steps for each hard drive you want to install.

5-5 Installing the Motherboard

This section describes how to install the motherboard to the chassis. To do this, you are required to remove the hard drive tray.
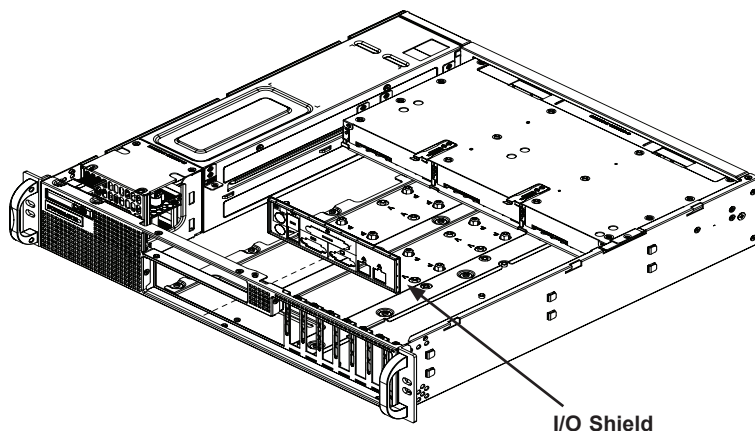
I/O Shield

Figure 5-6: I/O Shield Placement

I/O Shield

The I/O shield holds the motherboard ports in place. Install the I/O shield before you install the motherboard.

Installing the I/O shield

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, and precautions.

2. Make sure the I/O shield matches the motherboard ports. You may need to punch out the printer port.

3. With the illustrations facing the outside of the chassis, place the shield into the space provided.

4. Once installed, the motherboard will hold the I/O shield in place.

Remove Screws

**Remove the
HDDs to access and
remove this screw**
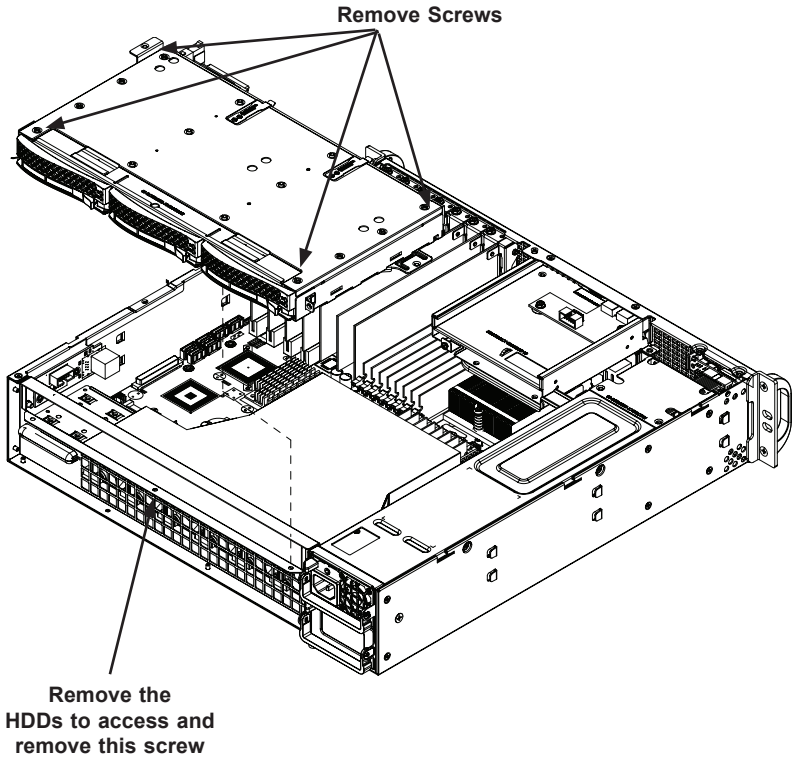
Figure 5-7: Hard Drive Tray Screws

Hard Drive Tray and DVD-ROM Drive Removal

Before installing the motherboard, you must remove the hard drive tray.

Removing the Hard Drive Tray

1. Pull all three hard drives out of the hard drive tray.

2. Remove each of the four exterior hard drive tray screws and then center
    screw, which must be removed through the inside of the middle drive tray
    compartment. For screw locations, see illustration above.

**DVD-ROM/
USB Comport
Bracket**

USB Comport

DVD-ROM Drive

**DVD-ROM/USB
Comport Bracket**
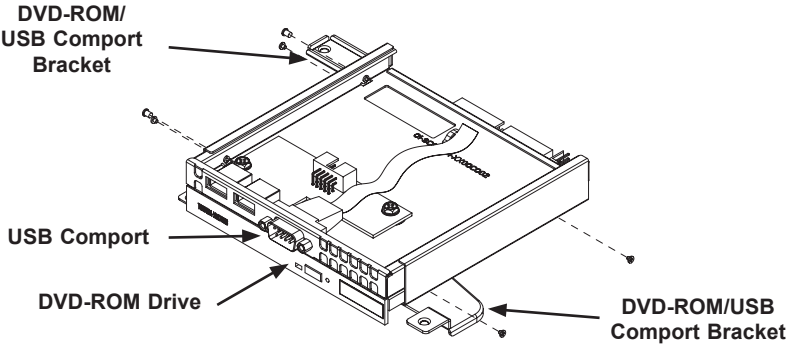
Figure 5-8: DVD-ROM Drive and USB Comport

The DVD-ROM is connected to a comport USB tray. Both must be removed and replaced as a unit.

Removing the DVD-ROM Drive/USB Comport Unit

1. Locate and remove the screws holding the DVD-ROM/USB comport unit in place.

2. If necessary, disconnect any cables to the DVD-ROM and USB comport unit.

3. Lift the unit up and out of the chassis.

Figure 5-9: DVD-ROM Drive Removal

Permanent and Optional Standoffs

Standoffs prevent short circuits by securing space between the motherboard and the chassis surface. The SC823M chassis includes permanent standoffs in locations used by most motherboards.

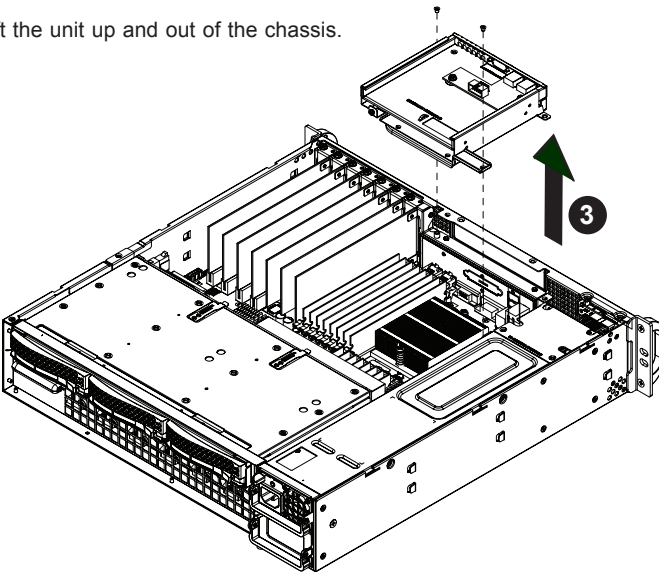Some motherboards require additional screws for certain CPUs, heatsinks, and other components. Optional standoffs are included for these motherboards. To use an optional standoff, screw the standoff into the chassis in the use the optional standoff in the same manner as the permanent standoffs.

M/B standoff
6-32 to 6-32

M/B (CPU) standoff
M5 to 6-32

Pan head
6-32 x 5 mm
[0.197]

Figure 5-10: Motherboard Standoffs and Motherboard Pan Head Screw

Installing the Motherboard

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, precautions, and cable connections.

2. Open the chassis cover.

3. As required by your motherboard, install standoffs in any areas that do not have a permanent standoff.

4. Lay the motherboard on the chassis aligning the permanent and optional standoffs. In addition, make sure the motherboard aligns with the I/O shield.

5. Secure the motherboard to the chassis using the rounded, Phillips head screws.

6. Secure the CPU(s), heatsinks, and other components to the motherboard as described in the motherboard documentation.

7. Connect the cables between the motherboard, backplane, chassis, front panel, and power supply, as needed. Also, the fans may be temporarily removed to allow access to the backplane ports.
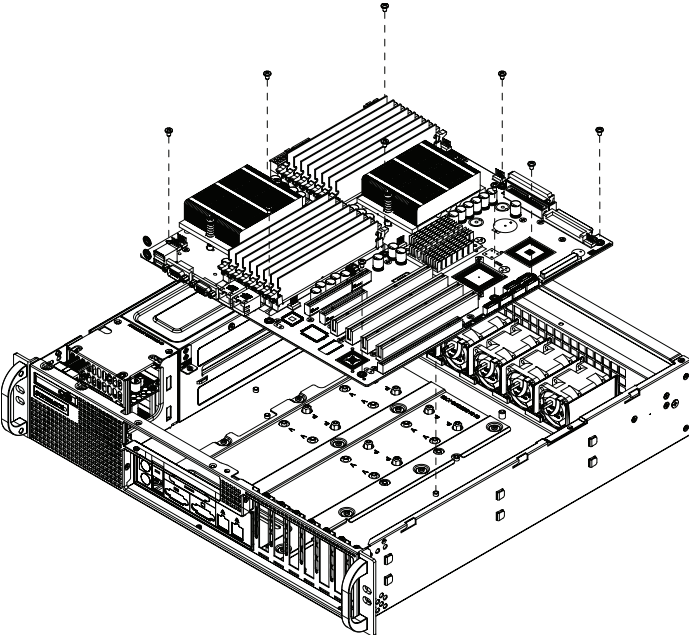
Figure 5-11: Installing the Motherboard

Add-on/Expansion Card Setup

SC823M chassis include slots for add-on cards and expansion cards. The number of slots varies depending upon the chassis model and the configuration of the system. See below for information specific to each chassis model.

Add-on/Expansion Card Setup in Low-Profile Model Chassis

In SC823M low-profile chassis models, up to seven add-on/expansion cards may be used.

Installing an Add-on or Expansion Card in a Low Profile Chassis

1. Confirm that each add on card you are installing includes a standard "L" bracket.

2. Disconnect the power supply and lay the chassis on a flat surface.

3. Remove the screw holding the slot cover in place on each card slot to be used. Remove the slot cover and keep the screw for later use.

4. Slide the card's L-bracket into the slot as illutstrated below, simultaneously connecting the add-on cards and/or expansion cards to the mother board. Follow any additional card manufacturer's instructions.

5. Secure each card's L-bracket using the screw that was previously removed.
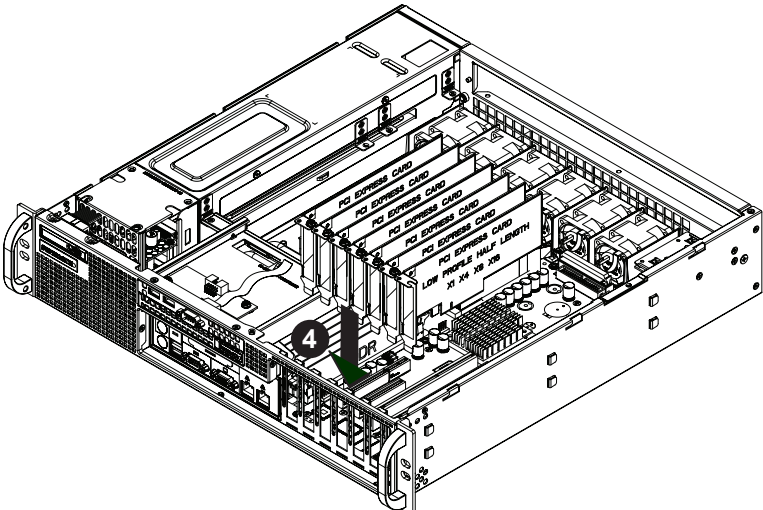
Figure 5-12: Installing Add-on/Expansion Cards - Low-Profile Chassis

Add-on/Expansion Card Setup in UIO Model Chassis

The configuration of the add-on/expansion cards in UIO models will vary, depending upon if a Universal I/O card is used:

With a universal I/O (UIO) card:
>   Up to three full-height, half-length I/O may be used
>   Up to three low-profile expansion slots may be used.

Without a universal I/O (UIO) card:
>   Up to four full-height, half-length I/O slots may be used

Installing an Add-on or Expansion Card in a Low-Profile Chassis

1. Confirm that each add on card you are installing includes a standard "L" bracket.

2. Disconnect the power supply and lay the chassis on a flat surface. If you have not done so, open the chassis cover.

3. Remove the two screws and the bracket securing the left side of the slot covers (A).

4. Remove the two screws and the bracket securing the right side of the slot covers (B).
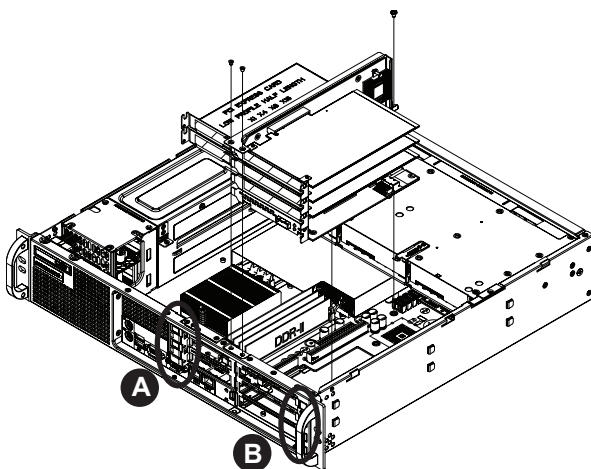
Figure 5-13: Installing Add-on/Expansion Cards - UIO Chassis

5. Connect the add-on cards and/or expansion cards to the mother board. Follow add-on card manufacturer's instructions.

6. Secure each card to the chassis using the card's L bracket and the screw previously removed.

7. Replace the brackets securing the left and right sides of the slot covers, using the screws previously removed.

5-6   Installing the Air Shroud
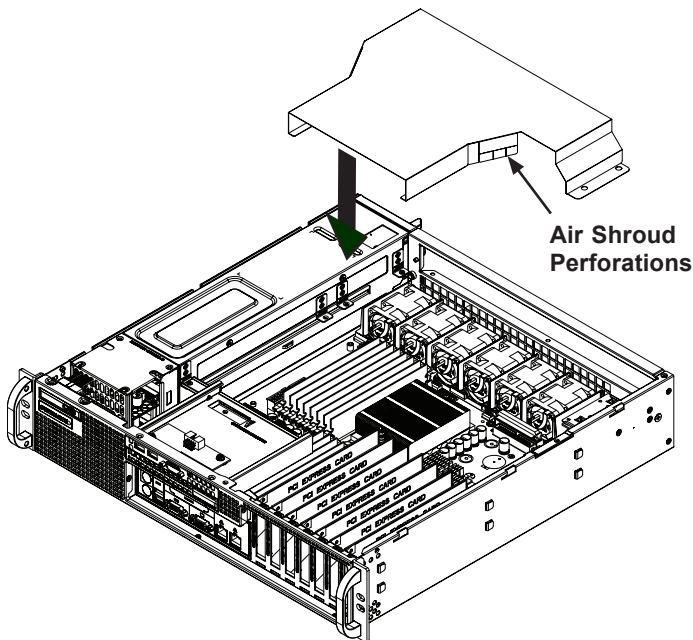
Figure 5-14: Air Shroud for SC823M Chassis

Air shrouds concentrate airflow to maximize fan efficiency. The SC823M chassis air shroud does not require screws to set up.

Installing the Air Shroud

1. Each air shroud includes perforations that can be removed to accommodate motherboard components. To ensure maximum cooling, remove only the perforations that are required.

2. Place air shroud in the chassis. The air shroud covers the four fan slots nearest to the DVD-ROM drive.

5-7   Checking the System Air Flow

Proper airflow allows the chassis to keep the server components cooled and prevent damage. Use the following steps to check airflow after setup and in the unlikely event the chassis needs to be serviced.

Checking the Server's Air Flow

1. Make sure no cables or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables. For the SC823M chassis it is recommended that cables run beside the power supply as much as possible.

2. Make sure there are no objects to obstruct airflow in and out of the server.

3. Do not operate the server without hard drives or dummy drives in the hard drive trays.

4. Use recommended server parts only.

5. The control panel LEDs inform you of system status. See "Chapter 3: System Interface" for details on the LEDs and the control panel buttons.

5-8   Completing the Installation

Once you the air shroud is properly installed, you must do the following

Completing the Installation

1. Replace the DVD-ROM drive unit and connect the DVD-ROM drive to the motherboard.

2. Replace the hard drive tray. The hard drive tray includes a SAS/SATA back-plane. Connect the backplane to the motherboard.

3. Securely close the chassis cover.

If the chassis will be installed into a rack, continue to the next chapter for rack installation instructions.

5-9   System Fans

The SC823M chassis includes four fans for cooling and air circulation. A dummy fan is included as a place holder.

System Fans Included

Optional Fans Not Included
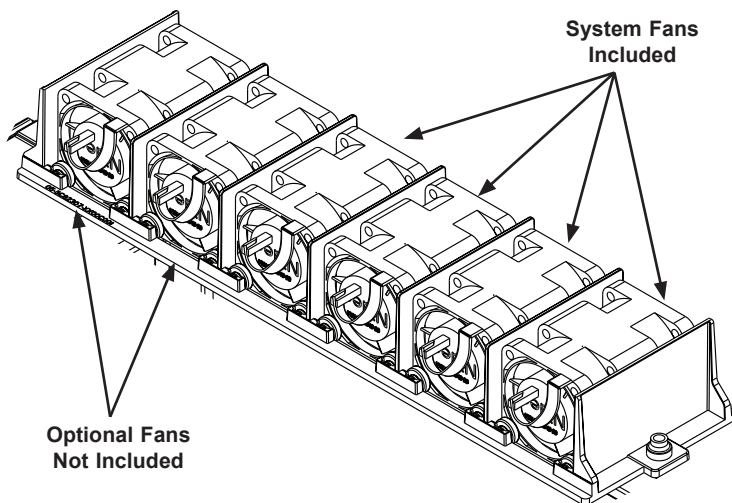
Figure 5-15: System Fan and Dummy Fan in Fan Tray

Replacing a System Fan

1. If necessary, open the chassis while the power is running to determine which fan needs replacing. (Never run the server for an extended period of time with the chassis open.)

2. Turn off the power to the system and unplug the system from the outlet.

3. Remove the hard drive tray and DVD-ROM drive. For instructions on doing this, see the section of this chapter on Installing the motherboard.

4. Disconnect the system fan from the motherboard and lift the fan from the fan tray.
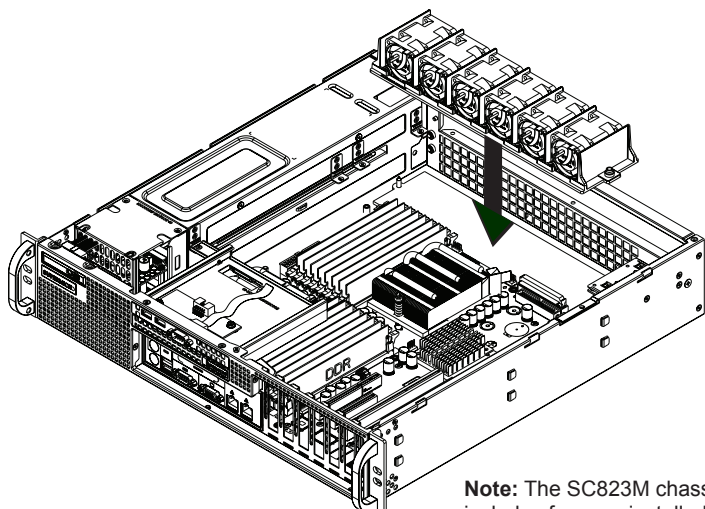
Note: The SC823M chassis includes four pre-installed fans. Two extra slots are included for an optional fifth and sixth fan.

Figure 5-16: Placing the System Fan

5. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans. Each fan includes rubber feet to reduce vibrations. Always use all four feet when placing a system fan.

6. Connect the new fan to the motherboard.

7. Replace the DVD-ROM drive unit and hard drive fan tray.

8. Power up the system to check the new fan performance.

9. Close the chassis cover securely.

5-10 Power Supply

The SC823M chassis has a 700 Watt power supply. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Power Supply Replacement

The SC823M chassis models include a redundant power supply. Power supplies can be replaced without powering down the system. Replacement units can be ordered directly from Supermicro (see contact information in the Preface).
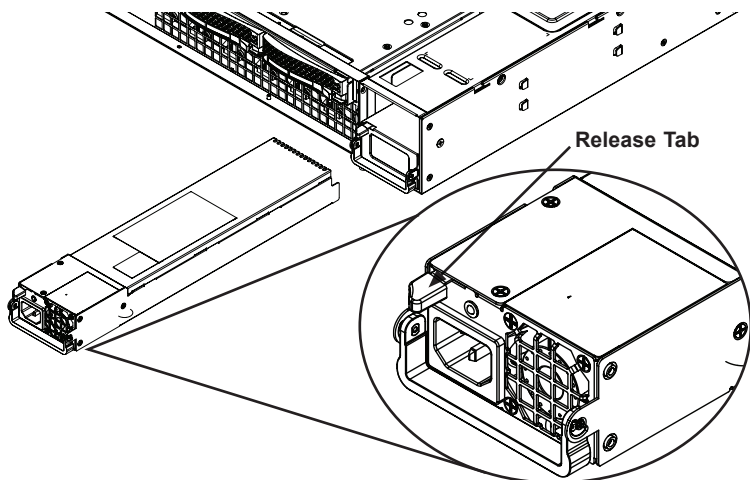
Figure 5-17: Removing the Power Supply

The SC823M chassis includes a redundant power supply. It is not necessary to power down the server to replace a power supply.

Replacing the Power Supply

1. Push the release tab (on the back of the power supply) as illustrated.

2. Pull the power supply out using the handle provided.

3. Replace the failed power module with a new unit. To do this, push the new power supply module into the power bay until you hear a click.

4. Plug the AC power cord back into the module and power up the server.

5-11 Power Distributor

Replacing the Power Distributor

The power distributor provides failover and power supply redundancy. In the unlikely event you must replace the power distributor, do following

Replacing the Power Distributor

1. Power down the server and remove the plug from the wall socket or power strip.

2. Remove all cable connections to the power supply from the motherboard, backplane, and other components. Also, remove both power supplies.

3. Locate the power distributor between the power supply and the fan row.

4. Remove the three screws securing the power supply.

5. Pull the power distributor from the chassis. Gently guide all the cables through the power distributor housing.

6. Slide the new power distributor module into the power distributor housing. Make sure that you slide the cables through the bottom of the housing.

7. Reconnect all the power cables, replace the power supply, and insert the plugs into the wall.
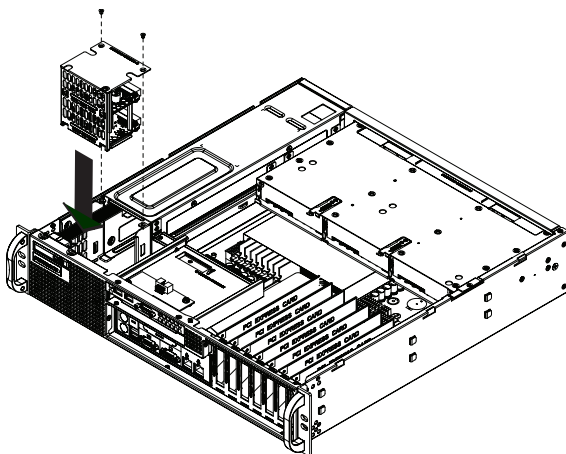
Figure 5-18: Replacing the Power Distributor

Notes

Chapter 6

Rack Installation

6-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time.

6-2 Unpacking the System

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold your chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

6-3 Preparing for Setup

The box your chassis was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (25 inches).

- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.

- In single rack installation, stabilizers should be attached to the rack.

- In multiple rack installations, the racks should be coupled together.

- Always make sure the rack is stable before extending a component from the rack.

- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.

- Determine the placement of each component in the rack *before* you install the rails.

- Install the heaviest server components on the bottom of the rack first, and then work up.

- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.

- Allow the hot plug hard drives and power supply modules to cool before touching them.

- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

6-4   Rack Mounting Instructions

This section provides information on installing the SC823M chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.
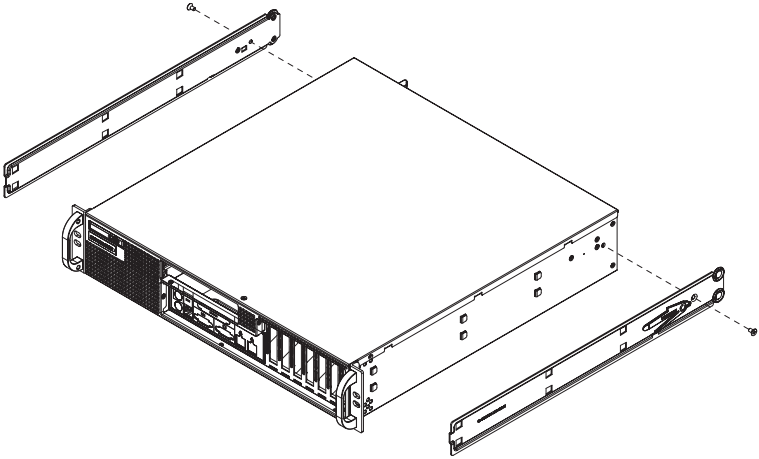
Identifying the Sections of the Rack Rails

The chassis package includes two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.

Inner Rails

The inner rails come pre-installed on the chassis. The chassis can be used normally with or with out a rack. Use the following instruction in the unlikely event you must change the inner rails.

Replacing the Inner Rails

1. Power down and unplug the chassis. It is also recommended that you remove the power plug from the chassis.

2. On a solid, stable surface, lay the chassis on its side.

3. The inner rail is held in place by one screw near the rear of the chassis. Remove this screw.

4. Remove the inner rail by sliding the rail toward the rear of the chassis.

5. Place the new rail on the chassis, aligning the chassis hooks with the rails.

6. Slide the rail toward the front of the chassis.

7. Secure the rail with one screw.

8. Repeat these steps for the other inner rail.

Figure 6-1: Removing Inner Rails
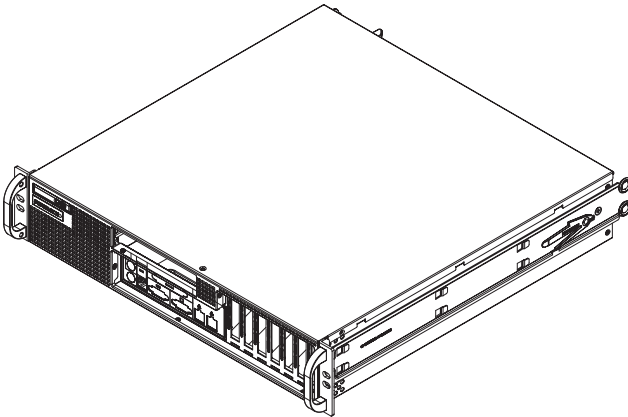
Figure 6-2: Installing Inner Rails

**Secure to the
Front of the Rack**

**Secure to the
Rear of the Rack**

**Attach Outer Racks
together**
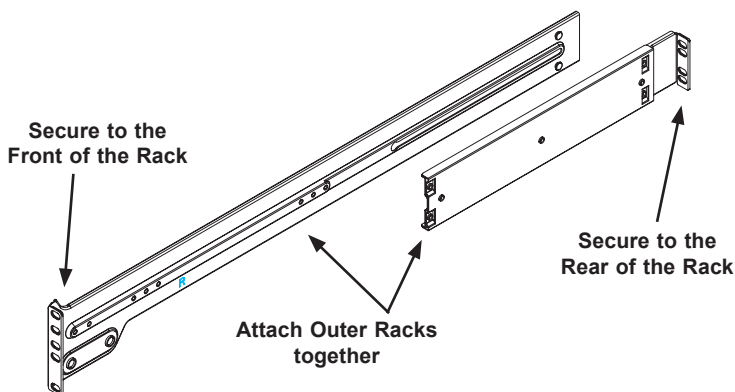
Figure 6-3: Assembling the Outer Rails

Outer Rack Rails

Outer rails attach to the server rack and hold the server in place. The outer rails for the SC823M chassis extend between 26" inches and 33.5" inches.

Installing the Outer Rails to the Rack

1. Attach the short bracket to the outside of the long bracket. You must align the pins with the slides. Also, both bracket ends must face the same direction.

2. Adjust both the short and long brackets to the proper distance so that the rail fits snugly into the rack.

3. Secure the long bracket to the front side of the outer rail with two M5 screws and the short bracket to the rear side of the outer rail with three M5 screws.

4. Repeat steps 1-4 for the left outer rail.
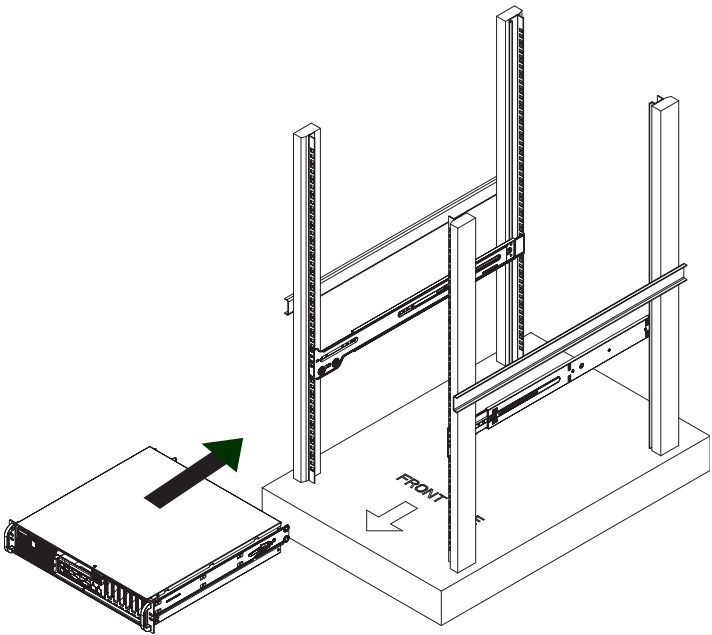
Figure 6-4: Installing the Rack Rails

Installing the Chassis into a Rack

1. Confirm that chassis includes the inner rails and rail extensions. Also, confirm that the outer rails are installed on the rack.

2. Line chassis rails with the front of the rack rails.

3. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). When the server has been pushed completely into the rack, you should hear the locking tabs "click".

4. (Optional) Insert and tightening the thumb screws that hold the front of the server to the rack.
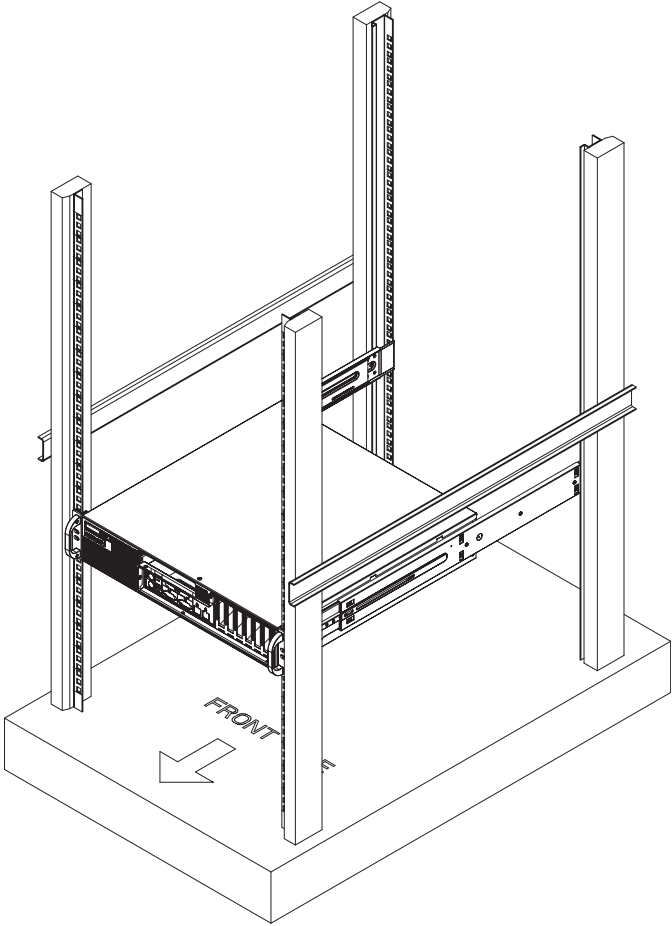
Figure 6-5: Installing the Rack Rails
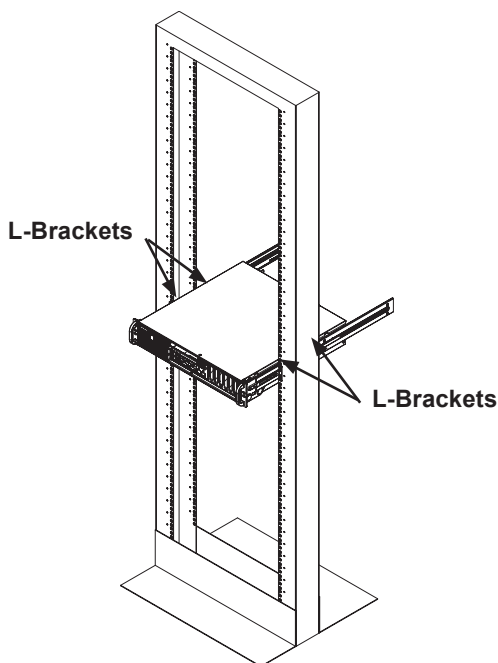
Figure 6-6: Installing into a Mid-Position Rack

6-5 Installing the Chassis in a Mid-mount Position Rack

Included with the mounting rails are four L-brackets, which are used when installing the chassis in a mid-position, or Telco rack.

Mid-mount Rack Installation

1. To install the chassis into a Telco type rack, use two L-shaped brackets on either side of the chassis (four total).

2. Determine how far follow the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back. If a bezel is included on your server, remove it.

3. Attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the telco rack. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

Notes

Appendix A

SC823M Chassis Cables

A-1   Overview

A variety of cables are supported for your chassis system. In order to obtain the most up-to-date information on compatible cables, compoments and configurations, refer to the manufacturer of the motherboard you are using and to our Web site at: www.supermicro.com.

SC823MTQ-R700LPB and SC823MTQ-R700UB		
Part No.	Qty.	Description
CBL-0061L	3	35cm SAS cable
CBL-0087	1	20" 16 pin to 16 pin round ribbon cable
CBL-0160L	2	US power cord 16 AWG

A-3   Compatible Cables

These cables are compatible with the SC823M Chassis.

Alternate SAS/SATA Cables

Some compatible motherboards have different connectors. If your motherboard has only one SAS connector that the SAS/SATA cables must share, use one of the following cables. These cables must be purchased separately.

Cable Name: SAS Cable   **Quantity:** 1
Part #: CBL-0175L
Alt. Name: "Big Four"

   Description: This cable has one SFF-8484 (32 pin) connector on one end and 4 SAS connectors (7 pins each) at the other. This cable connects from the Host (motherboard or other controller) to the backplane SAS hard drive port.

Cable Name: SAS Cable   **Quantity:** 1
Part #: CBL-0116
Alt. Name: iPass or "Small Four"

   Description: This cable has one ipass (SFF-8087/mini-sas) connector (36 pins) at one end and 4 SAS connectors on one end. This cable connects from the Host (motherboard or other controller) to the backplane SAS hard drive port.

Extending Power Cables

Although Super Micro chassis are designed with to be efficient and cost-effective, some compatible motherboards have power connectors located in different areas.

To use these motherboards you may have to extend the power cables to the mother boards. To do this, use the following chart as a guide.

Power Cable Extenders		
Number of Pins	**Cable Part #**	**Length**
24 pin	CBL - 0042	7.9"(20 CM)
20 pin	CBL - 0059	7.9"(20 CM)
8 pin	CBL - 0062	7.9"(20 CM)
4 pin	CBL - 0060	7.9"(20 CM)

Front Panel to the Motherboard

The SC823M chassis includes a cable to connect the chassis front panel to the motherboard. If your motherboard uses a different connector, use the following list to find a compatible cable.

Front Panel to Motherboard Cable (Ribbon Cable)		
Number of Pins (Front Panel)	**Number of Pins (Motherboard**	**Cable Part #**
16 pin	16 pin	CBL - 0049
16 pin	20 pin	CBL - 0048
20 pin	20 pin	CBL - 0047
16 pin	various*	CBL - 0068
20 pin	various*	CBL - 0067

* Split cables: Use these cable if your motherboard requires several different con-nections from the front panel.

A-5   Chassis Screws

The accessory box includes all the screws needed to setup your chassis. This section include descriptions of the most common screws used. Your chassis may not require all the parts listed.

M/B

Pan head
6-32 x 5 mm
[0.197]

HARD DRIVE

Flat head
6-32 x 5 mm
[0.197]

DVD-ROM CD-ROM FLOPPY DRIVE

Pan head
6-32 x 5 mm
[0.197]

Flat head
6-32 x 5 mm
[0.197]

Round head
3 x 5 mm
[0.197]

Round head
2.6 x 5 mm
[0.197]

RAIL

Flat head
M4 x 4 mm
[0.157]

Round head
M4 x 4 mm
[0.157]

Flat head
M5 x 12 mm[0.472]

Washer for M5

M/B STANDOFFS

M/B standoff
6-32 to 6-32

M/B (CPU) standoff
M5 to 6-32

Thumb screw
6-32 x 5 mm [0.197]

Appendix B

SC823M Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

SC823MTQ-R700LPB and SC823MTQ-R700UB	
	700W **(Redundant)**
MFR Part #	PWS-0065
Rated AC Voltage	100 - 240V 50 - 60Hz 9.5 - 4.5 Amp
+5V standby	4 Amp
+12V	58 Amp

Notes

Appendix C

SAS-818TQ Backplane Specifications

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

C-1   ESD Safety Guidelines

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.

- Touch a grounded metal object before removing a component from the antistatic bag.

- Handle the RAID card by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.

- When handling chips or modules, avoid touching their pins.

- Put the card and peripherals back into their antistatic bags when not in use.

C-2   General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the backplane.

- Disconnect the power cable before installing or removing any cables from the backplane.

- Make sure that the backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

C-3   An Important Note to Users

- All images and layouts shown in this user's guide are based upon the latest PCB Revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.
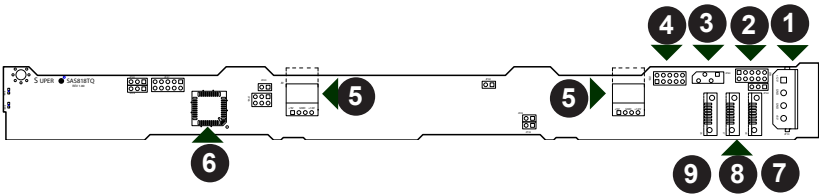
C-4   Front Connectors and Jumpers

Figure C-1: SAS-818TQ Front View

Front Connectors

1. JP10: Backplane Main PWR (4-Pin)
2. JP51: Sideband Connector
3. JP44: I²C Connector
4. JP26: ACT IN
5. J9 and J10: CD-ROM/Floppy Drive (4-Pin) PWR Connector
6. AMI MG9071 Chip
7. J8: SAS Port #0
8. J7: SAS Port #1
9. J6: SAS Port #2

C-5   Front Connector and Pin Definitions

#1. Backplane Main Power Connector

The 4-pin connector, designated JP10, provides power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector (JP10)	
Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

#2. Sideband Connector

The sideband connector is designated JP51. For SES-2 to work properly, you must connect an 8-pin sideband cable to JP51. See the table to the right for pin definitions.

Sideband Connector (JP51)			
Pin #	Definition	Pin #	Definition
2	Backplane Addressing (SB5)	1	Controller ID (SB6)
4	Reset (SB4)	3	GND (SB2)
6	GND (SB3)	5	SDA (SB1)
8	Backplane ID (SB7)	7	SCL (SB0)
10	No Connection	9	No Connection

#3. I²C Connector

The I²C Connector, designated JP44, is used to monitor HDD activity and status. See the table on the right for pin definitions.

I²C Connector Pin Definitions (JP44)	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

#4. Activity LED Header

The activity LED header, designated JP26, is used to indicate the activity status of each hard drive. The Activity LED Header is located on the rear of the front panel. For the Activity LED Header to work properly, connect using a 10-pin LED cable.

SAS Activity LED Header Pin Definitions (JP26)			
Pin #	Definition	Pin #	Definition
1	ACT IN#0	6	ACT IN#4
2	ACT IN#1	7	ACT IN#5
3	ACT IN#2	8	ACT IN#6
4	ACT IN#3	9	ACT IN#7
5	Ground	10	Empty

#5. CD-ROM/Floppy 4-Pin Connectors

The 4-pin connectors, designated J9 and J10, provide power to the CD-ROM and floppy drives. See the table on the right for pin definitions.

CD-ROM/ FDD Power 4-Pin Connector (J9 and J10)	
Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

#6. MG9072 Chip

The MG9072 is an enclosure management chip used in the 818 TQ backplane.

#7 - #9. SAS Ports

The SAS ports are used to connect the SAS drive cables. The 3 ports are designated #0 - #2 and are compatible with SATA drives.
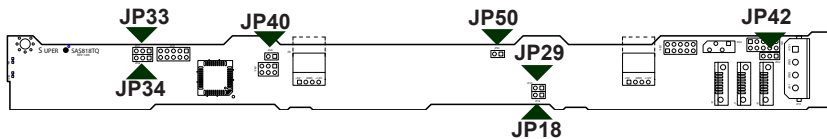
C-6 Front Jumper Locations and Pin Definitions

Figure C-2: SAS-818TQ Front Jumpers and Connectors

Explanation of Jumpers

To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board.

Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.
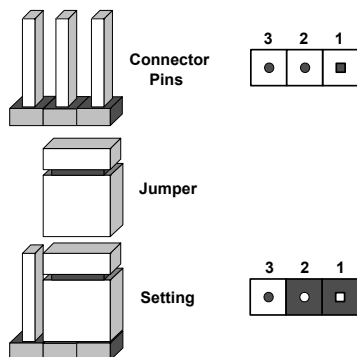
Jumper Settings		
Jumper	**Jumper Settings**	**Note**
JP18	Open = Enabled (Default) Closed = Disabled	Buzzer RESET
JP29	Open = Default Closed = Chip Diagnostic	Chip RESET

I²C and SGPIO Modes and Jumper Settings

This backplane can utilize I²C or SGPIO. I²C is the default mode and can be used without making changes to your jumpers. The following information details which jumpers must be configured to use SGPIO mode or restore your backplane to I²C mode.

I²C Mode (Default)		
Jumper	**Jumper Setting**	**Note**
JP33	2-3	Controller ID #1
JP34	1-2: ID#0 2-3: ID#1	Backplane ID #1
JP40	Open	I²C Reset _SDOUT#1
JP42	2-3	I²C Backplane ID _SDIN#1
JP50	Closed	I²C Reset #1

SGPIO Mode Only		
Jumper	**Jumper Setting**	**Note**
JP33	1-2	Controller ID #1
JP34	1-2: ID#0 2-3: ID#1	Backplane ID #1
JP40	Closed	I²C Reset _SDOUT#1
JP42	1-2	I²C Backplane ID _SDIN#1
JP50	Open	I²C Reset #1

Backplane Front LEDs

SAS 818S Front LED	
Jumper	**Description**
D4 (Front)	Overheat/Drive Failure LED Indicator (Red light: flashing, Buzzer: On)

C-7   Rear Connectors and LED Indicators

Rear Connector Locations
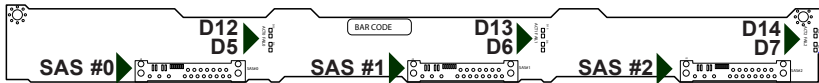
Rear Connector/LED Indicator Descriptions

Rear SAS Connectors	
Rear Connector	**SAS Drive Number**
SAS#0	SAS/SATA HHD #0
SAS#1	SAS/SATA HHD #1
SAS#2	SAS/SATA HHD #2

Rear LED Indicators	
Rear LED Indicator	**Hard Drive Activity and Failure LEDs**
D12	SCA#0 Activity LED (Connected to HDD)
D13	SCA#1 Activity LED (Connected to HDD)
D14	SCA#2 Activity LED (Connected to HDD)
D5	SAS#0 Failure LED (Connected to HDD)
D6	SAS#1 Failure LED (Connected to HDD)
D7	SAS#2 Failure LED (Connected to HDD)

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aircraft/emergency communication devices or other critical systems whose failure to per-
form be reasonably expected to result in significant injury or loss of life or catastrophic
property damage. Accordingly, Supermicro disclaims any and all liability, and should
buyer use or sell such products for use in such ultra-hazardous applications, it does so
entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold
Supermicro harmless for and against any and all claims, demands, actions, litigation,
and proceedings of any kind arising out of or related to such ultra-hazardous use or
sale.